Apportioning PCB Contamination in the Lower Fox River, Wisconsin

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Expert Report of

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Exhibit 4000

1. Introduction

This report presents the results of an analysis of multiple lines of evidence conducted to understand the origin of PCB contaminants in sediment of the Lower Fox River, Wisconsin. This analysis supports a reasonable and appropriate division of responsibility, and an apportionment of remedial costs associated with the PCB contaminated sediment among the PRPs, as set forth in Appendix E.

The costs associated with remediating the PCB contamination can be apportioned based on where the PCB contaminants originated. This analysis considers contaminant discharge loading sources (suspended solids, PCBs, and other contaminants), how the contaminants were transported, where the contaminants are currently located, and the costs associated with remediating the impacted sediment in the Lower Fox River.

This analysis employs a multiple lines of evidence approach to reach the conclusions presented in this report. The integration of results from multiple lines of evidence allows for a cross check of the information, and helps identify areas of potential uncertainty. This process ultimately produces a balanced apportionment opinion based on empirical data.

This report is divided into sections organized to explain how analysis of the multiple lines of evidence was used in developing the apportionment presented in Section 7 at the end of the report. Four experts were involved in completing the analysis supporting the conclusions in this report. These experts had primary responsibility for specific sections of the research and opinions expressed herein. Their compensation is not contingent in any way on the content of those opinions or on the outcome of this litigation.

Philip B. Simon is the principal author of this report. Mr. Simon has forty-two years of professional experience practicing analytical, environmental and forensic chemistry and of that time, twenty-eight years are associated with work through Ann Arbor Technical Services, Inc. (ATS) for which he serves as President and Director of Chemistry. Mr. Simon has served as the principal investigator in more than 100 projects involving inorganic and organic chemicals in the environment. Twenty-one of those projects involved PCBs as the primary chemicals of interest. Mr. Simon has authored numerous papers and presentations concerning the analysis, fate, and effects of chemicals in the environment. A curriculum vitae for Mr. Simon is provided in Appendix A.

Mr. Simon oversaw and is primarily responsible for the geomorphic mapping of sediment deposition and erosion zones, contaminant distribution, aerial photographic analysis, sediment core chemical and radiochemical stratigraphic profile development and development of model input assumptions.

Mr. James Braithwaite, P.E., BCEE had primary responsibility for preparing Section 4 of this report and also assisted in the review and preparation of other sections of this report. Mr. Braithwaite has forty-four years of experience in the design and construction of wastewater and solid waste management facilities, and the investigation and remediation of soils, sediment, groundwater, industrial sites and municipal and industrial landfills. Mr. Braithwaite's experience includes the treatment of industrial wastewaters for a variety of industrial chemicals, including PCBs. A curriculum vitae for Mr. Braithwaite is provided in Appendix A.

Mr. Braithwaite oversaw and is primarily responsible for the detailed analysis of facility manufacturing processes and wastewater treatment discharge histories for the key PRP dischargers considered in this analysis, and the development of model input assumptions.

The hydrodynamic, sediment transport and chemical fate and transport model used in this apportionment analysis was completed as a collaborative effort by Mr. Simon, Mr. Braithwaite, and the modeling team led

by John Hamrick, Ph.D., P.E., BCEE, and Craig Jones, Ph.D. Dr. Hamrick of Tetra Tech, Inc. has more than 35 years of consulting, academic, and research experience in the areas of environmental, water resources, and coastal engineering and physical oceanography. He is an internationally recognized authority on computer modeling of surface water systems and is the author of the Environmental Fluid Dynamics Code (EFDC) model used in this analysis under funding from the USEPA. The EFDC model has been used by the USEPA to model PCB transport and fate at the Housatonic River Site, and has been used to conduct peer-reviewed modeling at numerous other contaminated sediment sites. Dr. Craig Jones of Sea Engineering, Inc. was a technical advisor and integral part of the collaborative model team. Dr. Jones has conducted a peer review of the modeling efforts, and had the primary responsibility for development of Section 5 of this report. Dr. Jones is a senior engineer at Sea Engineering, Inc. and is a nationally recognized expert in the field of measurement and analysis of hydrodynamic, sediment, and contaminant transport processes in coastal, estuarine, riverine, and lacustrine environments. He has more than 16 years of experience serving as a lead developer in state-of-the-science hydrodynamic and sediment measurement and modeling techniques in aquatic environments. A curriculum vitae for Dr. Jones is provided in Appendix A.

The U.S. Army Corps of Engineers (ACOE) engaged in extensive, nearly annual navigational dredging, particularly in the lower reach of the Lower Fox River. A detailed evaluation of the influences of these activities on the PCB contaminant distribution was completed by Donald Hayes, Ph.D., P.E. and is presented in this report as Appendix D. Dr. Hayes has nearly thirty years of experience in dredging, sediment management and contaminated sediment remediation. A curriculum vitae for Dr. Hayes is provided in Appendix A.

While a number of parties have attempted to apportion responsibility for the PCB contamination in the Lower Fox River in the past, those previous efforts were limited with respect to the time period considered, the geographic area covered, and/or the breadth of site data evaluated. The apportionment presented in this report combines a fluvial geomorphic analysis of the river, analysis of archival aerial photographs, chemical fingerprinting, and state-of-the-art numerical hydrodynamic modeling, each evaluated separately and then reconciled in a multiple lines of evidence approach to develop an apportionment that is supported by the available factual data.

The authors of this report reserve the right to supplement or modify the opinions stated in this report as further information becomes available, including any new expert reports and/or depositions in this case.

relative uniqueness of the CCP PCB replacement compounds and timing of their use in production, compounds of MIPB and the products that succeeded it can be used to assign chronologic time in stratigraphic profiles. The detection of any of them in the stratigraphic sequence is reflective of post-PCB-reformulation deposition, and the specific compounds detected can be used to identify the earliest dates the deposits could have been laid down. Occurrence of one or more of these PCB-replacement products is reflective of release to the environment at, or after, the dates the product was used in commerce. Therefore, PCB contaminants that co-occur with these compounds, and those that occur in stratigraphic layers above them, were deposited after 1970.

The co-occurrence of MIPB compounds with PCBs in stratigraphic layers, as depicted in the figures of representative cores from OU3 and OU4 reflects that those layers were deposited after the CCP product was reformulated to replace PCBs in 1971 (Figures 6-29 through 6-32). This age-dating information has also been used to verify sediment deposition rates as a function of time and geomorphologic unit to crosscheck the numerical model outputs. Radiochemical profiling of cores collected in 2008 by Anchor/QEA are also a source of age-dating information for these same purposes (Connolly, 2010). The PCB/Cesium137 core profile data from Anchor/QEA have been fully integrated into this analysis. Examples of this are shown in Figures 6-33 through 6-36.

The archival records indicate that at least five to six percent of the total PCB discharged to the LFR occurred after 1971 [Appendix C model PCB input dataset]. These chemical profiles confirm this, and establish to a reasonable degree of scientific certainty, the quantity of PCB contamination deposited in sediments after 1971 was well in excess of the two percent cited in WDNR Technical Memorandum 2d.

6.4. Navigational Dredging Influences on PCB Contaminated Sediments

Next to the construction of locks and dams, by far the most significant anthropogenic influence on the LFR is the ACOE maintenance of the Federal Navigation Channel (FNC) that includes portions of the Lower Fox River and Green Bay. The navigation channel extends for more than 11 miles out in Green Bay and up through the Lower Fox River. Until de-authorization in 1967, and subsequent modification in 1982, the channel included three turning basins and extended up to De Pere dam. Beginning in 1967, the ACOE limited maintenance activity from the channel in Green Bay up to and including the turning basin at Ft. Howard. Figure 6-37 shows the extent of the navigation channel.

Although the fate and transport analysis does not directly model dredging activities, it takes the most significant effects of those activities into account. It does this by using a 1937 bathymetric survey that shows the navigational channel maintained in subsequent years by ACOE dredging. The ACOE dredging did not significantly affect the deposition patterns of PCBs within OU4 for several reasons. First, ACOE dredging did not add PCBs to the LFR. Second, dredging upstream of the Fort Howard turning basin stopped after 1967, which is prior to the period of maximum release of PCBs. Third, most of the sediment dredged in OU4 was disposed of outside OU4. Fourth, although the dredging process re-suspended and re-released contaminated sediment, especially because the ACOE did not always use best dredging practices, the amounts involved are relatively low and would not have travelled far. Sediment resuspension and associated contaminant loss is typically expected to be about 1% of the total mass with normal conventional dredging operations. Careless sediment management during some prior years increased losses during LFR operations. Still, total releases during dredging are likely less than 5% of the mass dredged. Even then, most of this 5% loss likely resettled within 100 meters of the dredging operation. The resuspended sediment fraction transported away from the site represents

an environmental exposure risk concern, but does not significantly change the areas in which sediments were initially deposited.

Although some PCB-contaminated sediment was transported downstream as a result of ACOE'S navigational dredging activity, these do not represent a significant PCB mass and do not affect our ability today to source the PCB mass being remediated. Consequently, the existing map of PCB contamination in the LFR is a reasonable representation of deposition from natural processes. Even though significant anthropogenic influences occurred in the LFR, only a small fraction of the sediment PCB mass moved significant distances from their initial allocation. The ACOE navigational dredging activities do not alter the apportionment conclusions presented in Section 7. Appendix D contains a complete accounting of the ACOE activity in OU4.

Recent testimony of witnesses produced by the AOCE, including that of Joseph Gailani, Jan Miller and Paul Schroeder, generally corroborates the information and conclusions presented in this analysis.

Anthropogenic Influences on PCB Contaminated Sediment

Appendix D
Anthropogenic Influences on PCB Contaminated Sediment

1. Dredging by the ACOE

The ACOE is responsible for maintaining the Federal Navigation Channel (FNC) that includes portions of the Lower Fox River and Green Bay. The ACOE's dredging has the greatest anthropogenic influence on OU4 sediments. This section explores available information about ACOE dredging activities in OU4 in detail and, using empirical data, assesses the influence of ACOE activities on PCB distribution and associated remedial obligations.

The River and Harbor Acts of 1866 authorized the Federal Navigation Project in Green Bay Harbor and the Lower Fox River. The LFR navigation project initially involved dredging an entrance channel in Green Bay 26 feet deep for a distance of about 11.5 miles to Grassy Island; an entrance channel and a river channel 24 feet deep and 300 feet wide from Grassy Island to a point about 0.5 mile upstream from the mouth of the LFR; a LFR channel 24 feet deep varying in width to a point 1,700 feet to the Chicago and North Western Railway Bridge, and then 18 feet deep and 150 feet wide to the De Pere Dam.

The authorized scope of the LFR project has been modified a number of times since inception, most recently in 2007. Figure D-1 shows the location of the navigation channel and turning basins from De Pere Dam to the mouth of the LFR at Green Bay. OU4 includes the 6-mile-long (north to south) reach between the De Pere Dam and Green Bay. The river is broad and shallow at the upper end of OU4 between the De Pere Dam and the Fort Howard turning basin. The narrow navigation channel in this portion of OU4 was de-authorized in 1967 and is no longer maintained. The Fort Howard turning basin marks the upper end of the current navigation maintenance activity. Downstream of the Fort Howard turning basin, the Federal Navigation Channel (FNC) has been periodically dredged to maintain the authorized navigation depth of 24 feet (WDNR, 2006).

Records of dredging equipment used, volumes dredged, dates of operations, and sediment disposal locations during historical dredging operations are only partially complete. Bathymetry data were also collected at regular intervals, at least across the FNC in areas dredged. Although some information is missing, the data provide a reasonably accurate and comprehensive summary of dredging in the LFR.

2. Examination of the Extent of ACOE Dredging

Table D-1 presents, by year for the period of record 1957 through 2010, the dredge locations (when known), the volume of material dredged, the disposal location, the volume of material removed from the Lower Fox River (as distinct from side-cast or open-water disposal practices), the contractor, and the equipment used in the Lower Fox River downstream of De Pere Dam. The available records illuminate several important aspects of historical ACOE dredging activities in the LFR:

- The ACOE removed sediment from the LFR during the period of 1957 (time of earliest records made available) through 1971. Currently available ACOE records of dredging during this 15-year period do not distinguish the exact sediment volume dredged from the in-river portion of the channel, but it is between 100,172 and 311,090 cubic yards (ACOE, 2010).
- For the period 1972 through 1984, the records indicate that the ACOE conducted maintenance dredging in the LFR in about half of those years. For all but one year during that period, dredged sediment was disposed of in CDFs. During this 13-year period, the ACOE records document the removal of 299,233 to 991,014 cubic yards (ACOE, 2010).

- For the period 1985 through 2010, the ACOE dredged sediment from the LFR and placed the material in CDFs during 16 of those 24 years. The records for this period of time were sufficiently detailed that we could determine, with reasonable certainty, where ACOE maintenance dredging occurred. Most of the ACOE's efforts were focused on the mouth of the river and the portion of the FNC that extends from the mouth out about 11 miles into Green Bay. Further, the river portion of the FNC it seems was never dredged completely, as there are sections of the FNC in the LFR for which there are no records of dredging activity having taken place during this period (these are in the more narrow segments of the LFR downstream from the Ft. Howard facility).
- More than 16 million cubic yards of dredged sediment were removed from the LFR FNC over the past fifty (50) plus years. However, it is estimated that only 1.4 to 2.3[1] million cubic yards were dredged and removed from the river portion of the LFR navigation channel.

3. Sediment and PCB Redistribution and Losses During Navigational Dredging

Prior submissions (Hayes, 2010 & 2011) have focused on dredging equipment and practices employed by the ACOE and their impact on PCB redistribution in OU4. The point of these discussions was on the lack of effectiveness of ACOE dredging in complete removal of PCB contamination. It was pointed out that a significant fraction of the sediment and PCB mass dredged likely remained in the waterway. Sediment resuspension and associated contaminant loss is typically expect to be about 1% of the total mass with normal conventional dredging operations. Careless sediment management increased losses during LFR operations. Still, total releases during dredging were likely less than 5% of the mass dredged (Hayes, 2011, ACOE, 1990a, ACOE, 1990b). Even then, most of this 5% loss likely resettled within 100 m of the dredging operation. The resuspended sediment fraction transported away from the site represents an environmental concern, but does not significantly change the areas in which sediment was initially deposited.

Residual sediment has also been raised as a significant concern. These are sediment fractions that the dredging operation loosens, but remain at the dredging location. This sediment is more susceptible to transport under high-flow conditions than undisturbed sediments and may increase benthic exposure to sediment contamination. Figure D-2 illustrates a common source of residual sediment during conventional navigation dredging – bottom smoothing of the convex scoops a conventional dredge buckets create. As shown in the figure, this sediment fraction primarily remains on-site, although they may be more environmentally accessible. Residual sediment is thought to represent 5 to 10% of the sediment dredged but this residual sediment remains in close proximity to the areas in which they were initially deposited (Hayes, 2010 & 2011, Patmont and Palermo, 2007, Desrosiers and Patmont, 2009, Fuglevand and Webb, 2009 and Timberlake et al, 2007).

ACOE records reviewed in this effort suggest that, prior to 1974, the ACOE sometimes used a sidecast disposal technique when dredging the FNC. This practice involved moving sediment from the navigation channel and casting that sediment into adjacent waters. Although ACOE records indicate sidecasting occurred on multiple occasions, their records do not show exactly where these occurred. Miller (9/7/12 Deposition) identified an area opposite Dutchman's Creek that was used for open water disposal within OU4 . He goes on to say that far more sediment dredged in OU4 was removed from the LFR than was disposed of at the Dutchman's Creek site.

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[1] In-river dredging from 1957 to 1967 utilized sidecasting, so there was no net removal from the system. Since 1985, the records show 25 to 30% of all ACOE dredging removed sediment from the river portion as opposed to the Bay portion. Since ACOE records from 1967 to 1985 do not show accurate dredging locations, the volume was estimated at 30% of the total dredging volume based on the records that combine in-river and Green Bay dredging.

The limited distance that sediment can be moved through sidecasting precludes any major change in sediment distribution within the system. Although no longer in the navigation channel, this sediment would generally remains adjacent to the areas in which they were initially deposited. Some sediment mass and associated PCB contamination would have been transported downstream during the sidecasting operation, but as with the resuspended sediment fraction noted above, the sediment losses do not affect our ability today to determine the source of PCB mass being remediated. The ACOE's STFATE model could be used to estimate that sediment and PCB loss during sidecasting, but applications at other sites suggest that the loss rate is likely less than 10% (US EPA, 1998).

4. Remedy Implications of Historical FNC Dredging Operations

This section will address substantive impacts to the remediation requirements that stem from FNC dredging operations.

The LFR channel upstream of the Ft. Howard turning basin was initially authorized to a depth of 18 ft. This portion of the FNC was de-authorized in 1967. ACOE records do not clearly state when this channel was last dredged to 18 ft prior to 1967. The bathymetric data shown in Figure D-3 show depths at or below the authorized channel depths as early as 1937 in much of the reach (Tetra Tech, 2004, 2008, 2010). More recent profiles show higher sediment elevations with no evidence of dredging since 1967. Figure D-4 shows example sediment core profiles from this reach; all exhibit PCB inventory at depth, covered by lower concentration sediments. Almost certainly, the higher concentrations represent discharges to the river in OU4 while the more dilute upper sediments represent a combination of lower concentration discharges in OU4, and some possible sediment redistribution or contaminant transport from upstream sources. Cores 4033R-02 and 4034-04 (shown on the left panel of Figure D-5) are typical of sediment PCB profiles in this reach. These trapped, high PCB concentration sediments are the remedial drivers for this reach. The time of deposition can be identified accurately if sufficient bathymetric data can be found.

A similar phenomenon exists in the lower portion of the LFR Federal Channel, albeit for a slightly different reason. Bathymetry data, some of which are presented in Figure D-3, show that the ACOE dredged deeper than the authorized navigation channel depth of 24 feet (Tetra Tech, 2004, 2008, 2010). The EPA noted that sediment cores taken from the LFR show "detectable PCB concentrations up to 10 feet below the navigation channel" (Haen, 2009). Increasing depth increases the channel's effectiveness as a sediment trap. Thus, this excessive over-dredging resulted in an increased sedimentation rate. Figure D-4 shows trapped PCB contamination. The core profiles on the right side of Figure D-5 depict typical PCB concentration profiles for this reach of the river (RETEC et al, 2002). Note the high PCB concentrations trapped below the authorized channel depth.

Figures D-3, D-4, and D-5 tell a compelling story of how high concentration PCB discharges remain trapped in the LFR despite extensive ACOE navigational dredging. Figure D-6 and D-7 show that trapped high PCB concentration sediments are widespread in OU4. Figure D-6, presents the percentage of the FNC surface area requiring remediation within Segments 1 through 4 of the LFR from the De Pere Dam to the mouth of the LFR, superimposed over the FNC boundary (Tetra Tech, 2012). Significant remedial areas exist within the FNC along the entire reach, with the smallest occurring upstream of the Consent Order line (US et al, 2010). Figure D-7 shows remedy costs within and outside the lateral confines of the FNC associated with sediments in Segments 1 through 4. The widespread occurrence of trapped high-concentration PCB sediments is demonstrated in the high cost of remediation within the FNC as compared to outside of the FNC (PCC, 2012).

5. Conclusions

- ACOE maintenance dredging in the FNC above the Ft Howard turning basin last occurred prior to 1967. As such, PCB distribution in this portion of OU4 has not been altered since before 1967.
- Currently available ACOE records from 1957 to 1984 do not distinguish the exact sediment volume removed from the in-river portion of the channel, but over that twenty-eight (28) years, it is between 399,405 and 1,302,104 cubic yards.
- ACOE dredging and sediment management practices were not consistent with available guidance (ACOE, 1983 & 1988 & 1996 & 2010, Palermo and Randall, 1990, and Palermo and Schroeder et al, 2008). These practices left behind contaminated sediment in the same general proximity as where they were initially deposited.
- The existing map of PCB contamination in the LFR is a reasonable representation of deposition from natural processes. Even though significant anthropogenic influences occurred in the LFR, only a small fraction of the sediment PCB mass moved significant distances from their initial location. Thus the overall deposition pattern has not been altered.
- ACOE dredging resulted in deepened channels that became efficient sediment traps during the period of PCB discharges. High PCB concentration sediments accreted in these areas and are still entombed within the channel boundaries.

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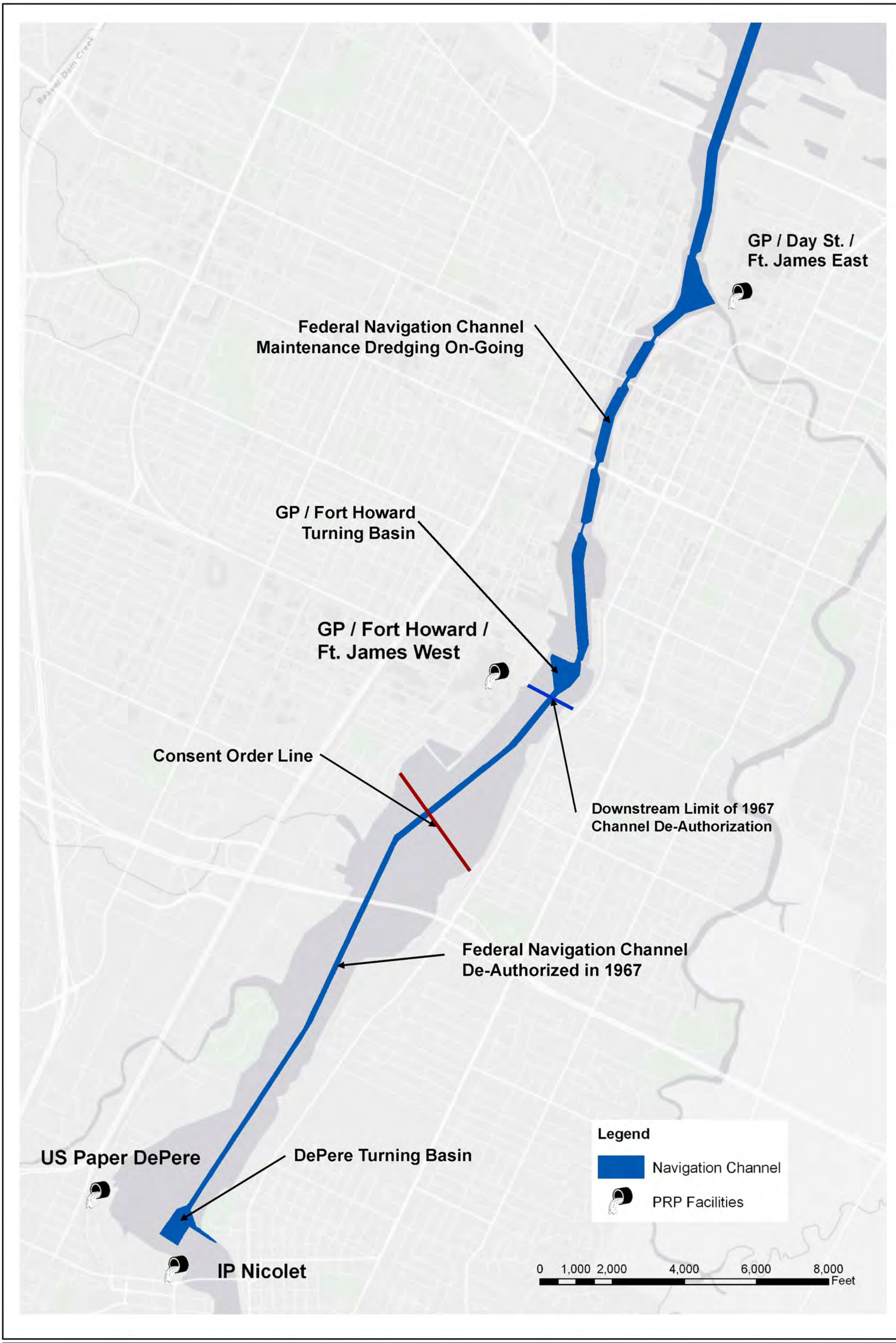

Notes:
1. Horizontal Datum: Wisconsin State Plane-Central Zone, NAD83, US Feet. Vertical Datum: NAVD88, US Feet.
2. Imagery Source, 2008 National Agriculture Imagery Program (NAIP), USDA Farm Service Agency.
3. All vertical data are IGLD 55 relative elevations.
4. The 2008 survey was converted from NAVD88 to IGLD55 by subtracting 1.14619 feet from the z values.
5. The 1937 and 1943 surveys predate the IGLD55 datum, but those surveys appear to correlate with the newer data sets.
6. Navigation channel extracted from NOAA ENC.
7. All bathymetry surfaces prior to 2004 were interpolated from single beam transect surveys and are assumed to comply with standards and accuracies specified by the US Army Corps of Engineers at the time the surveys were performed.
8. Depths Relative to 1962 US Army Corps of Engineers Channel Design.
9. Consent Order Line. United States of America and the State of Wisconsin, United States' Notice of Lodging of Consent Decree with Georgia-Pacific Consumer Products LP, Appendix B, filed on October 14, 2010, Dkt. 2, in the case *United States of America and the State of Wisconsin v. NCR Corp, et al.*, 10-C-910 (E.D. Wis).

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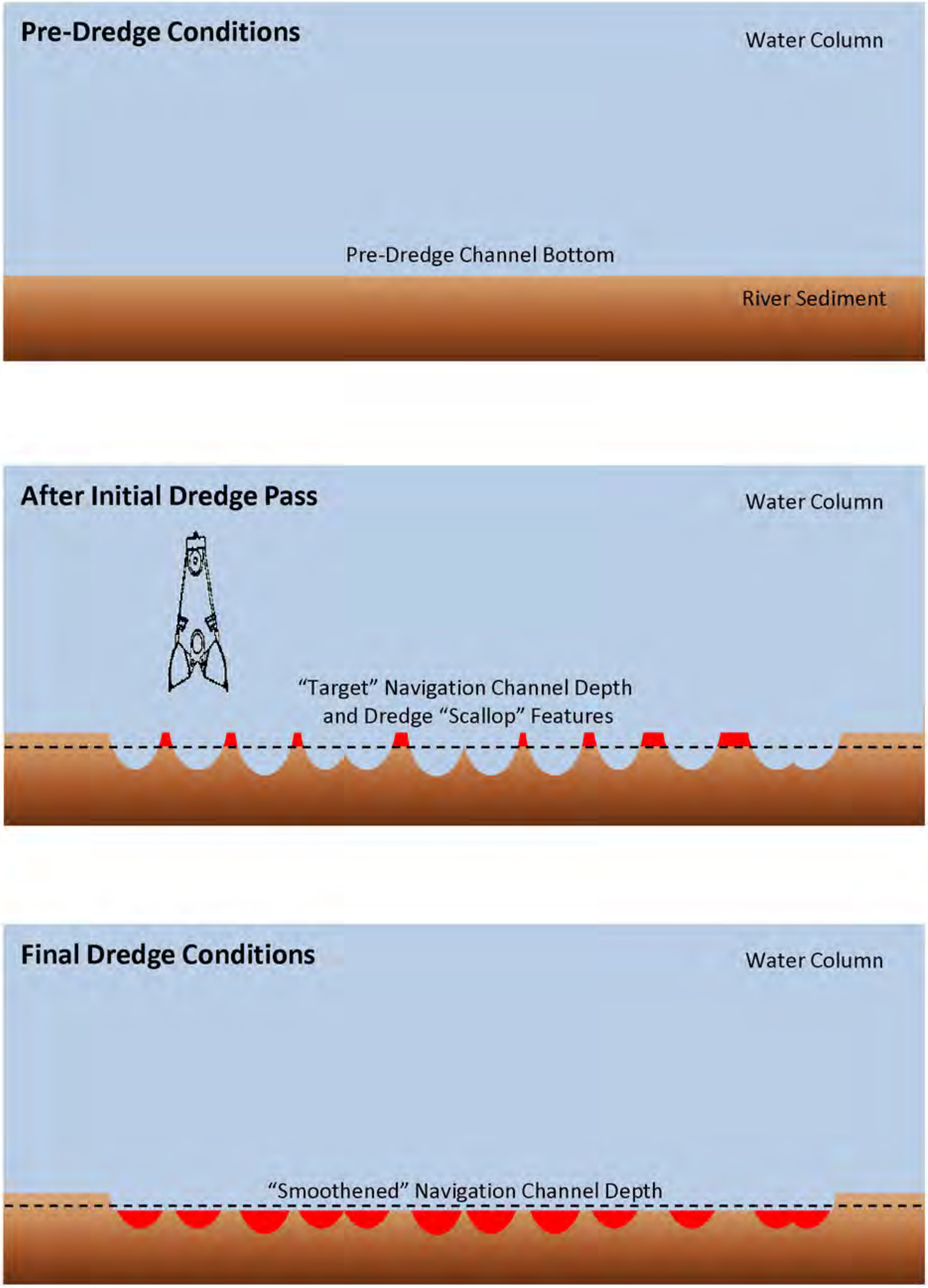
Figure D-1: Federal Navigation Channel and Operable Unit 4

Lower Fox River, Wisconsin
September 26, 2012

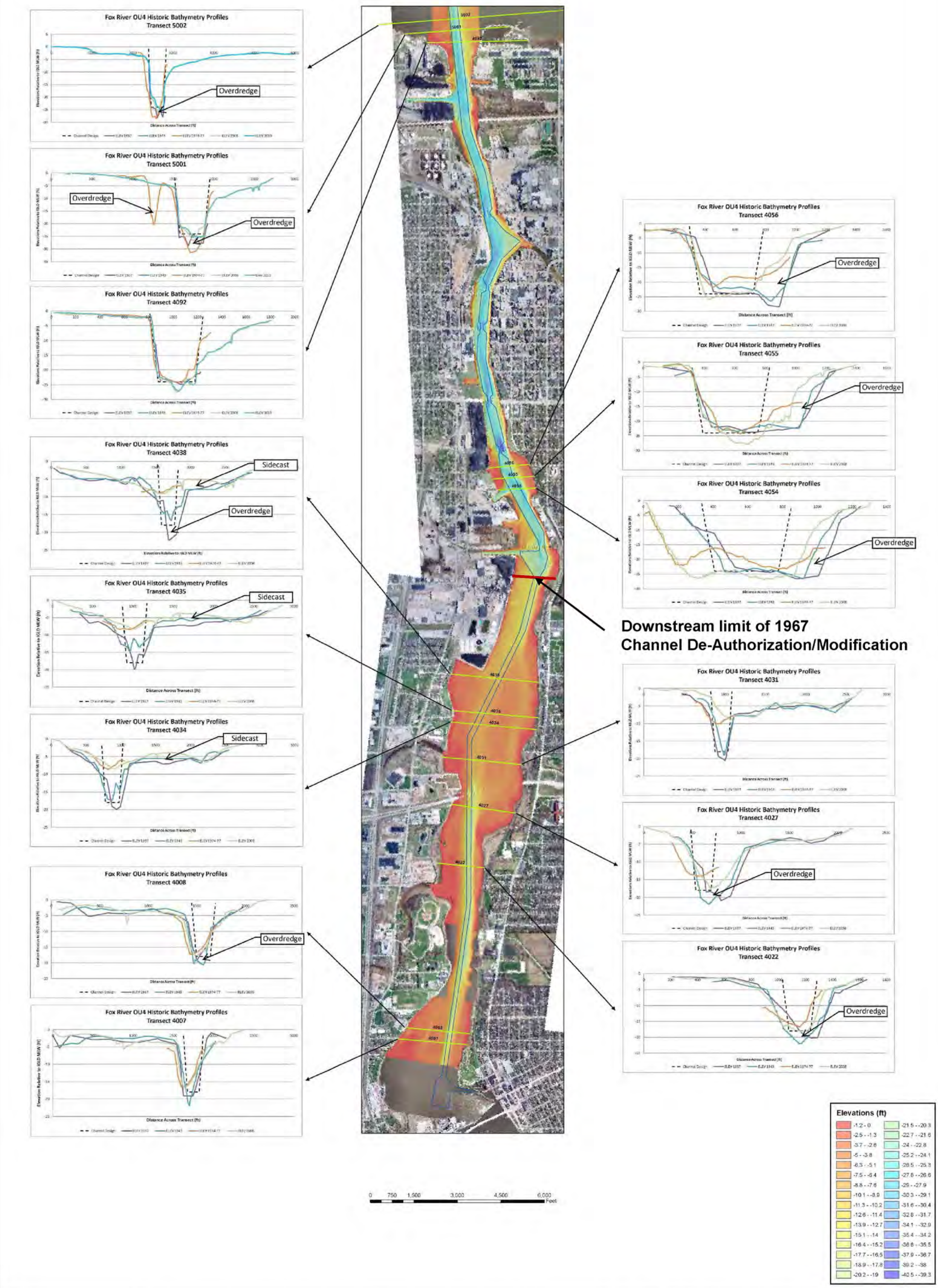


Notes: Conceptual figure, not to scale.

Figure D-2: Typical Conventional Bucket Dredge Operation

Lower Fox River, Wisconsin

September 26, 2012



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Notes:

1. Horizontal Datum: Wisconsin State Plane-Central Zone, NAD83, US Feet. Vertical Datum: NAVD88, US Feet.
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8. Depths Relative to 1962 US Army Corps of Engineers Channel Design.

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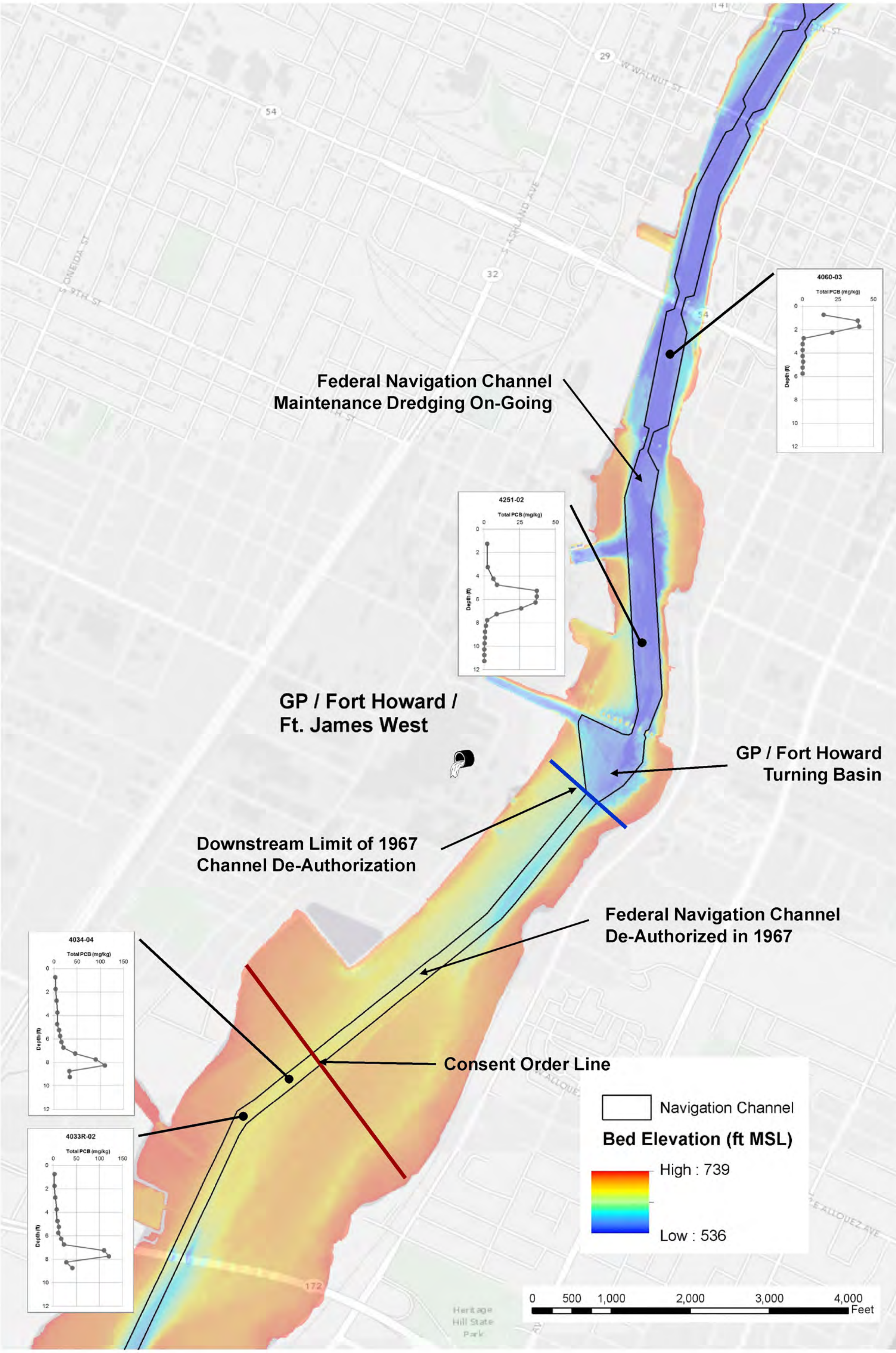
Figure D-3: Bathymetric Survey and Cross-Section Comparisons

Lower Fox River, Wisconsin
September 26, 2012



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Notes:
1. Horizontal Datum: Wisconsin State Plane-Central Zone, NAD83, US Feet. Vertical Datum: NAVD88, US Feet.
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9. Consent Order Line. United States of America and the State of Wisconsin, United States' Notice of Lodging of Consent Decree with Georgia-Pacific Consumer Products LP, Appendix B, filed on October 14, 2010, Dkt. 2, in the case *United States of America and the State of Wisconsin v. NCR Corp, et al.*, 10-C-910 (E.D. Wis).

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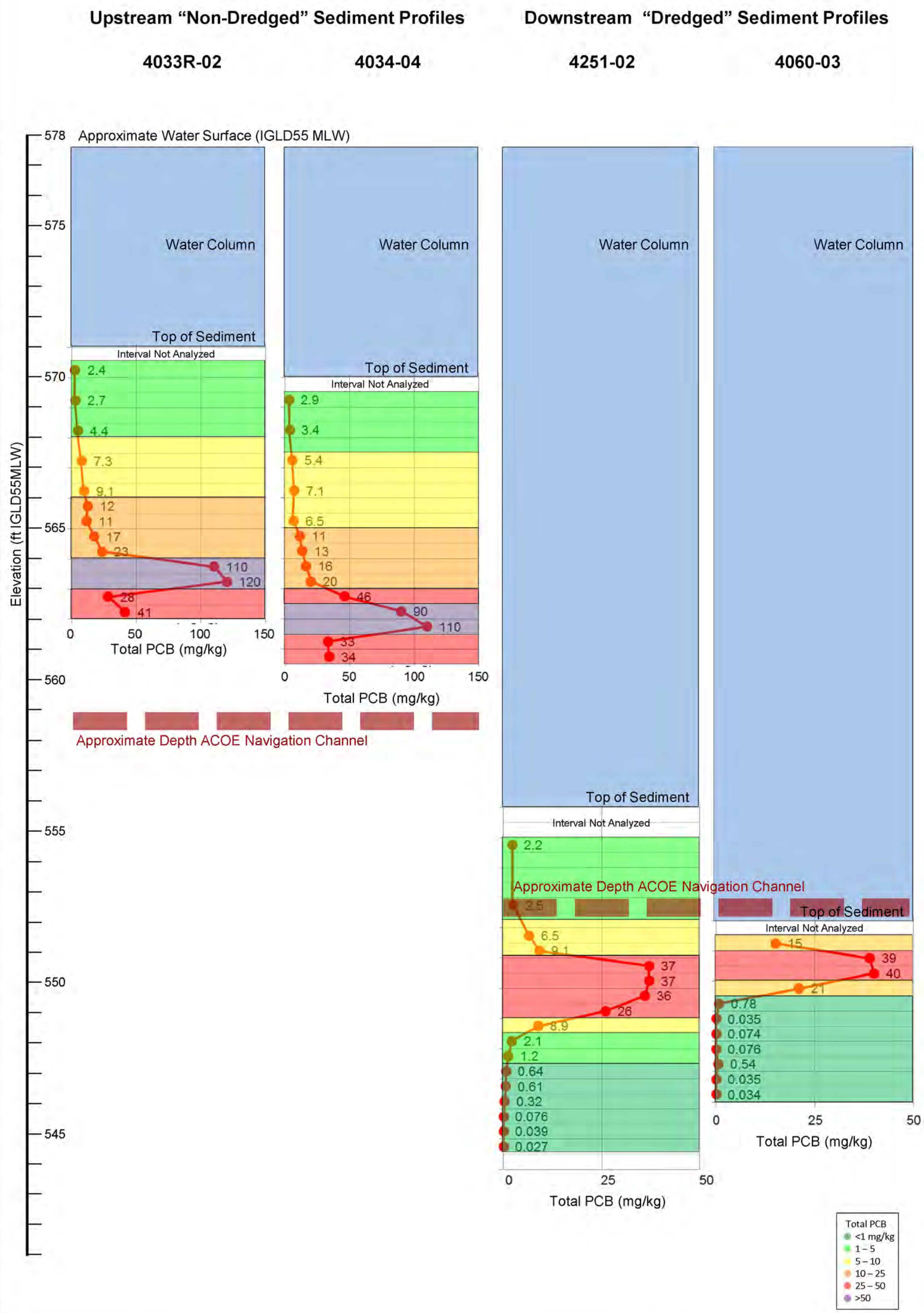
Figure D-4: PCB Concentration Profiles in Sediment Cores

Lower Fox River, Wisconsin
September 26, 2012



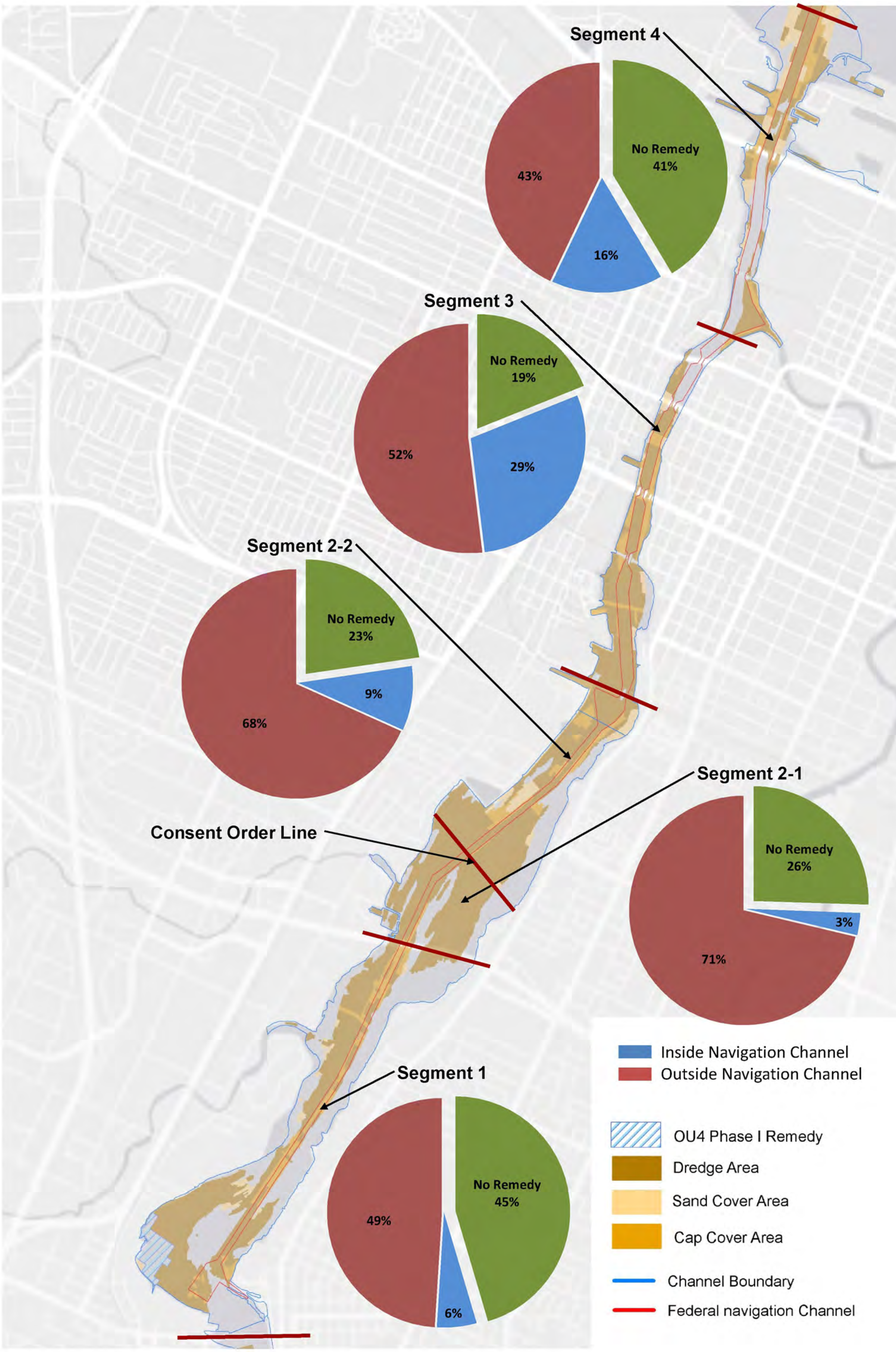
ATS ANN ARBOR TECHNICAL SERVICES, INC.

Notes:

1. Horizontal Datum: Wisconsin State Plane-Central Zone, NAD83, US Feet. Vertical Datum: NAVD88, US Feet.
2. Imagery Source, 2008 National Agriculture Imagery Program (NAIP), USDA Farm Service Agency.
3. All vertical data are IGLD 55 relative elevations.
4. The 2008 survey was converted from NAVD88 to IGLD55 by subtracting 1.14619 feet from the z values.
5. The 1937 and 1943 surveys predate the IGLD55 datum, but those surveys appear to correlate with the newer data sets.
6. Navigation channel extracted from NOAA ENC.
7. All bathymetry surfaces prior to 2004 were interpolated from single beam transect surveys and are assumed to comply with standards and accuracies specified by the US Army Corps of Engineers at the time the surveys were performed.
8. Depths Relative to 1962 US Army Corps of Engineers Channel Design.

Figure D-5: Detailed PCB Concentration Profiles in Sediment Cores

Lower Fox River, Wisconsin
September 26, 2012



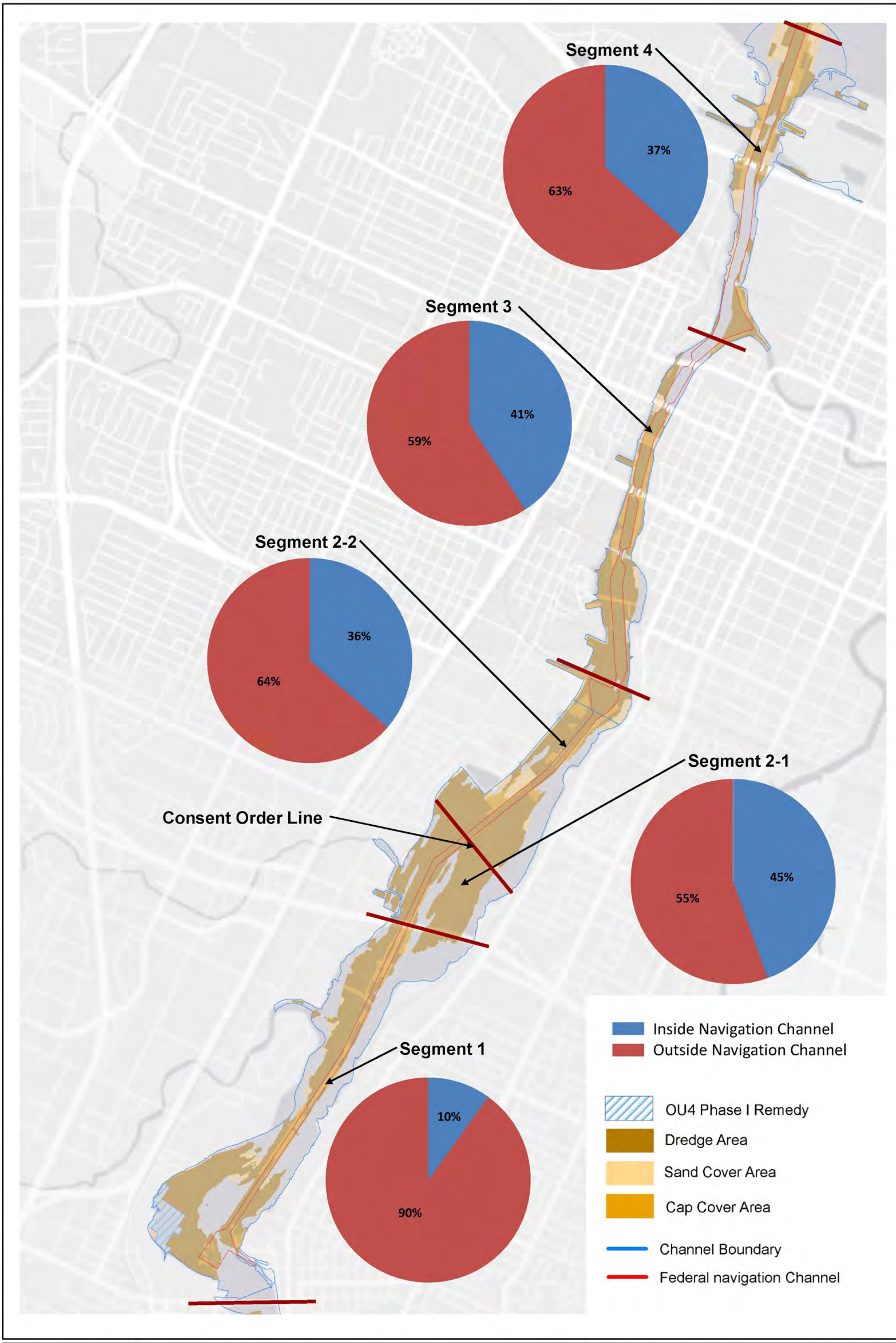
ATS ANN ARBOR TECHNICAL SERVICES, INC.

Notes:
1. Horizontal Datum: Wisconsin State Plane-Central Zone, NAD83, US Feet. Vertical Datum: NAVD88, US Feet.
2. Imagery Source, 2008 National Agriculture Imagery Program (NAIP), USDA Farm Service Agency.
3. All vertical data are IGLD 55 relative elevations.
4. The 2008 survey was converted from NAVD88 to IGLD55 by subtracting 1.14619 feet from the z values.
5. OU2, OU3, and OU4 remedial footprints based on "current design" provided by Tetra Tech, Inc., Rev. June 2012.
6. OU1 remedial footprint represents "Optimized Remedy", dated May 2008. http://www.littlelakecleanup.com/images/OU12009_OptRem.pdf
7. Costs based upon information provided by Project Control Companies, Inc., Rev. June 2012.
8. Consent Order Line. United States of America and the State of Wisconsin, United States' Notice of Lodging of Consent Decree with Georgia-Pacific Consumer Products LP, Appendix B, filed on October 14, 2010, Dkt. 3, in the case *United States of America and the State of Wisconsin v. NCR Corp, et al.*, 10-C-910 (E.D.Wis.).

N W E S

Figure D-6: Remedy vs Non-Remedy Footprint Expressed as Percent of Surface Area OU4

Lower Fox River, Wisconsin
September 26, 2012



Notes:

1. Horizontal Datum: Wisconsin State Plane-Central Zone, NAD83, US Feet. Vertical Datum: NAVD88, US Feet.
2. Imagery Source, 2008 National Agriculture Imagery Program (NAIP), USDA Farm Service Agency.
3. All vertical data are IGLD 55 relative elevations.
4. The 2008 survey was converted from NAVD88 to IGLD55 by subtracting 1.14619 feet from the z values.
5. OU2, OU3, and OU4 remedial footprints based on "current design" provided by Tetra Tech, Inc., Rev. June 2012.
6. OU1 remedial footprint represents "Optimized Remedy", dated May 2008. http://www.littlelakecleanup.com/images/OU12009_OptRem.pdf
7. Costs based upon information provided by Project Control Companies, Inc., Rev. June 2012.
8. Consent Order Line. United States of America and the State of Wisconsin, United States' Notice of Lodging of Consent Decree with Georgia-Pacific Consumer Products LP, Appendix B, filed on October 14, 2010, Dkt. 2, in the case *United States of America and the State of Wisconsin v. NCR Corp, et al.*, 10-C-910 (E.D. Wis).

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Figure D-7: Comparison of Remedy Costs
Operable Unit 4

Lower Fox River, Wisconsin
September 26, 2012